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A classification theorem for normal extensions

In [4], a generalized Galois theorem has been proved in the large context of so-called admissible Galois structures. These are adjunctions $\langle I, H\rangle \colon \mathscr{C} \rightharpoonup \mathscr{X}$ with classes of morphisms ("extensions") $\mathcal{E}$ and $\mathcal{Z}$ (of $\mathscr{C}$ and $\mathscr{X}$, respectively) satisfying suitable properties. In my talk, I shall explain how we can obtain a similar classification theorem for normal extensions. For this, we essentially use descent theory (as presented in [6]) and work with a replacement of the admissibility condition which holds in many algebraic contexts: i.e. I preserves pullbacks

$$\begin{array}{ccc} A & \longrightarrow & B \\ \big\downarrow & & \big\downarrow{\scriptstyle g} \\ D & \underset{h}{\longrightarrow} & C \end{array}$$

with g, h in $\mathcal{E}$ and g a split epimorphism. Actually, this condition (already considered in [5, 2, 1, 3] for instance) provides the existence of a normalisation functor and good stability properties of the class of trivial extensions which are needed to get weakly universal normal extensions used in the theorem. Along the way, we show that the normalization functor is the pointwise Kan extension of a (restricted) trivialization functor.

References:

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